

REMARKS

Claims 1, 2, 4, 5 and 8-36 are pending in the present application. Claims 1, 4, 5, 8, and 10 are amended. Claims 3, 6 and 7 are cancelled. No new matter has been entered.

Claim Rejections - 35 U.S.C. § 102

Claims 1, 2, 4 and 11-12 were rejected under 35 U.S.C. § 102(e) as being anticipated by *Toguchi* (U.S. Patent 6,753,097; hereinafter referred to as “*Toguchi* ‘097”); and claims 1, 3 and 5-9 were rejected under 35 U.S.C. § 102(e) as being anticipated by *Toguchi* (U.S. Patent 6,747,287, hereinafter referred to as “*Toguchi* ‘287”). Favorable reconsideration is requested.

The present invention as recited in claim 1 discloses a fluorescent material comprising either one or both of a perylene compound and an anthanthrene compound. The perylene compound (formula (1)) is substituted by two or more styryl groups each substituted by a diarylamino group. The anthanthrene compound is substituted by four groups having the structure of formula (102).

A. *Toguchi* ‘097

Toguchi ‘097 discloses an electroluminescence device which includes an anode, a cathode and at least one organic layer sandwiched between the anode and the cathode. (Abstract.) The organic layer is disclosed as including at least a light emitting layer which includes a perylene compound (Compound C1).

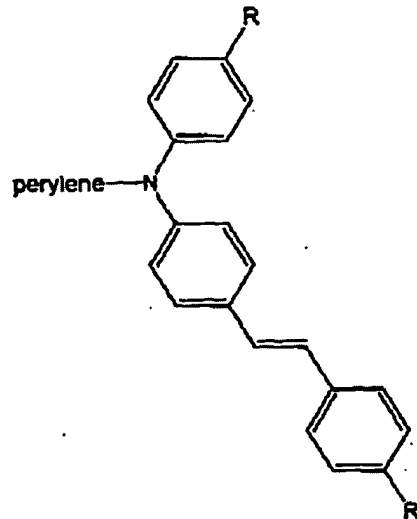
Applicant respectfully submits that *Toguchi* ‘097 does not disclose a substituted styryl group substituted by a diarylamino group as recited in claims 1 and 11. *Toguchi* ‘097 discloses that R¹ through R⁴ can be a styryl group, and that at least one of R¹ to R⁴ is a diarylamino group

(col. 3, lines 30-45), but does not disclose the combination of the two groups. In other words, *Toguchi* '097 discloses a perylene compound that is substituted by a styryl group and is also separately substituted by a diarylamino group.

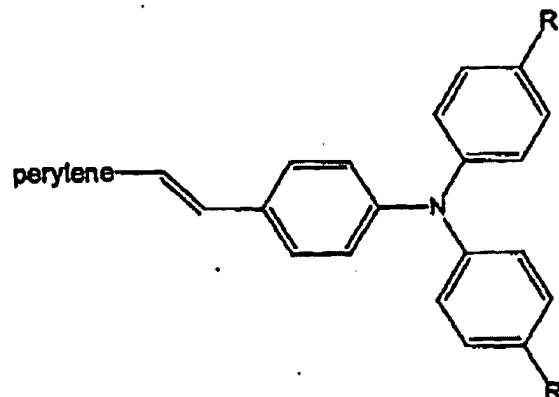
The Examiner cited column 5, lines 3-7 of *Toguchi* '097. This passage of *Toguchi* '097 states that an aryl group having a styryl group as a substituent, included with benzoperylene compounds having a diarylamino group as a substituent provides light-emission with a higher brightness. This statement discloses that the benzoperylene compound having a diarylamino group as a substituent can provide light-emission with a higher brightness if it also includes an aryl group having a styryl group as a substituent. The passage is clearer when read in context with the preceding paragraph (col. 4, line 66 to col. 5, line 7). *Toguchi* '097 does not disclose substituting the styryl group by a diarylamino group.

The figure below shows an example of the substituent disclosed in *Toguchi* '097 compared with an example substituent disclosed in the present invention.

An example of the substituent
disclosed in Toguchi'097



An example of the substituent
disclosed in the
present application



The Examiner also cited *Toguchi* '097 at col. 10, lines 22-31 as disclosing that the substituted alkenyl group includes a substituted styryl group that is substituted by a diarylamine. This passage merely states that a substituted styryl group is one example of the substituted alkenyls that can be used in *Toguchi* '097. This passage does not mention that the substituted styryl group is substituted by a diarylamine.

Toguchi '097 does not disclose a perylene compound having a substituted styryl group substituted by a diarylamino group. Therefore, *Toguchi* '097 does not disclose the elements as recited in claims 1 and 11.

Accordingly, withdrawal of the rejection of claims 1, 2, 4 and 11-12 based on *Toguchi* '097 is hereby solicited.

B. *Toguchi* '287

Toguchi '287 discloses an organic thin film transistor. The organic thin film includes a compound represented by the general formula [A]. (Abstract.) In formula [A], X is disclosed as an unsubstituted or substituted condensed aromatic hydrocarbon group having 6 to 34 carbon atoms. (Col. 3, lines 43-55).

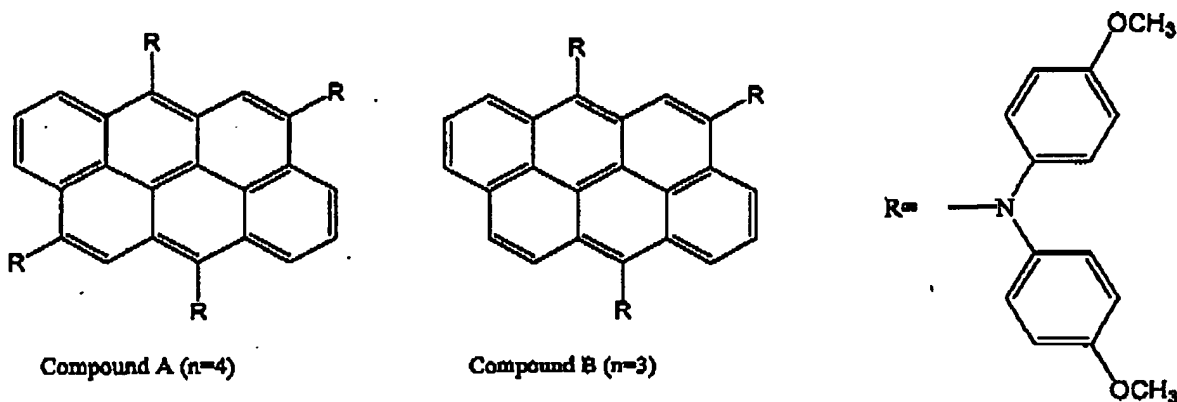
Ar¹ and Ar² are disclosed as being unsubstituted or substituted aromatic hydrocarbon groups having 6 to 20 carbon atoms. Examples of aromatic hydrocarbon groups having 6 to 20 carbon atoms for formula [A] include phenyl groups and naphthyl groups. (Col. 5, lines 54-60.)

Applicant respectfully submits that *Toguchi* '287 does not disclose either a perylene compound substituted by two or more styryl groups each substituted by a diarylamino group or an anthanthrene compound substituted by four diarylamine groups as recited in claim 1.

Toguchi '287 discloses that compound X in formula [A] is an unsubstituted or substituted condensed aromatic hydrocarbon having 6 to 34 carbon atoms. For example, perylene is disclosed as compound X. *Toguchi* '287 discloses four hundred twenty three examples of the compound available for the organic thin film of the organic thin film transistor. (Col. 12, lines

63-67.) An anthanthrene compound is disclosed in some of the examples. However, none of the anthanthrene compounds is substituted by four diarylamino groups.

The difference in the number of the groups represented by formula (102) of claim 1 has significant technical meaning. The presence of four groups represented by formula (102) provides an improvement in emission wavelength. The present invention is related to red-emission fluorescent material and an EL (electroluminescent) element, and thus the emission wavelength is preferably 600 nm or more. The emission wavelength can be predicted by molecular orbital calculation. The following is the result of the calculation of the emission wavelength using the molecular orbital calculation program "WinMOPAC ver 3.9" made by Fujitsu. The calculation method used was PM3.



Compound	Predicted Emission Wavelength
A	615 nm
B	598 nm

As clarified above, the emission wavelength in the case where $n=4$ is more than 15 nm longer than the emission wavelength in the case where $n=3$. Therefore, a red emission with high purity can be obtained when $n=4$.

Toguchi '287 does not disclose either a perylene compound substituted by two or more styryl groups each substituted by a diarylamino group or an anthanthrene compound substituted by four diarylamino groups as recited in claim 1. Therefore, *Toguchi '287* does not disclose the elements of claim 1.

Accordingly, withdrawal of the rejection of claims 1, 5, 8 and 9 based on *Toguchi '287* is hereby solicited.

Claim Rejections - 35 U.S.C. § 103

Claims 1, 10 and 14-36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Toguchi '287* in view of *Ohashi* (U.S. Patent 5,200,668); and claims 1, 5-6 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Toguchi '097*.

A. *Toguchi '287* in view of *Ohashi*

The Examiner admits that *Toguchi '287* does not disclose an organic film used for a luminescent element. (Office Action, page 4). The Examiner cites *Ohashi* as disclosing a luminescent element that comprises two electrodes with an organic thin film layer sandwiched therebetween. *Ohashi* discloses organic compounds for the organic thin film layer as including condensed polycyclic aromatic hydrocarbons. *Ohashi* also discloses mixtures of the compound to form a complex in an excited state. A compound having a quinone structure, such as hydroxyquinoline, is an example disclosed for forming a complex in an excited state.

Amendment under 37 C.F.R. §1.111
1 Application No. 10/801,546
Attorney Docket No. 042122

Applicant respectfully submits that one of ordinary skill in the art at the time of the invention would not have been motivated to combine the teachings of *Ohashi* with the teachings in *Toguchi* '287.

Toguchi '287 relates to a semiconductor device having an organic semiconductor film. The organic thin film transistor in *Toguchi* '287 is disclosed as improving response speed. However, *Ohashi* discloses a luminescence element having high luminance and high stability. One of ordinary skill in the art would not have a need to combine a luminescence element with an organic thin film transistor disclosed as having an improved response speed. Therefore, one of ordinary skill in the art at the time of the present invention would not be motivated to combine the teachings of *Toguchi* '287 with the teachings of *Ohashi*.

Accordingly, withdrawal of the rejection of claims 1, 10 and 14-36 based on *Toguchi* '287 in view of *Ohashi* is hereby solicited.

B. *Toguchi* '097

For at least the reasons stated above regarding the § 102 rejection based on *Toguchi* '097, withdrawal of the § 103 rejection based on *Toguchi* '097 is hereby solicited.

In view of the aforementioned amendments and accompanying remarks, Applicant submits that that the claims, as herein amended, are in condition for allowance. Applicant requests such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney to arrange for an interview to expedite the disposition of this case.

Amendment under 37 C.F.R. §1.111
Application No. 10/801,546
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If this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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